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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,234	11/12/2003	Armin Liebchen	55071-310	3610
7590 03/08/2005 MCDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096			EXAMINER KIM, PETER B	
			ART UNIT 2851	PAPER NUMBER

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/705,234

Applicant(s)

LIEBCHEN, ARMIN

Examiner

Peter B. Kim

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2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: p. 4, line 7, “illumination source 12 for illumination a mask” seems to be a typo. P. 4, line 13, “once such method” seems to be a typo.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 4, and 11 are rejected under 35 U.S.C. 102(a) as being anticipated by de Mol et al. (Mol) (2002/0036758).

Mol discloses a method for compensating for lens aberrations in an imaging system having an illumination source (LA) for illuminating a reticle (MA) and a projection lens (PL) for projecting light onto a substrate (W), the method comprising, defining a cost metric in a single numerical value which quantifies an imaging performance of an imaging system reflecting the effects of lens aberration of imaging performance including depth of focus performance (para 00049-0052, 0069), defining a source illumination profile defining light illuminated on the reticle (para 0067 and 0106), evaluating the cost metric based on the source profile (para 0067-0071), modifying the source illumination profile and reevaluating cost metric (para 0067, 0077, 0078) and repeating until the cost metric is minimized (table 1, para 0106, 0084-0088).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 5-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Mol et al. (Mol) in view of Dowsk, JR. et al. (Dowsk) (2002/0195538).

Mol discloses a method for compensating for lens aberrations in an imaging system having an illumination source (LA) for illuminating a reticle (MA) and a projection lens (PL) for projecting light onto a substrate (W), the method comprising, defining a cost metric in a single numerical value which quantifies an imaging performance of an imaging system reflecting the effects of lens aberration of imaging performance including depth of focus performance (para 00049-0052, 0069), defining a source illumination profile defining light illuminated on the reticle (para 0067 and 0106), evaluating the cost metric based on the source profile (para 0067-0071), modifying the source illumination profile and reevaluating cost metric (para 0067, 0077, 0078) and repeating until the cost metric is minimized (table 1, para 0106, 0084-0088).

However, Mol does not disclose forming a diffractive optical element. Dowsk discloses forming a diffractive optical element (para 0050-0061). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the diffractive optical element of Dowsk to the invention of Mol in order to increase depth of field and control focus-related aberrations (para 0027)

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Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over de Mol et al. (Mol) in view of Dowsk, JR. et al. (Dowsk) and Jeong et al. (Jeong).

Mol discloses a method for compensating for lens aberrations in an imaging system having an illumination source (LA) for illuminating a reticle (MA) and a projection lens (PL) for projecting light onto a substrate (W), the method comprising, defining a cost metric in a single numerical value which quantifies an imaging performance of an imaging system reflecting the effects of lens aberration of imaging performance including depth of focus performance (para 00049-0052, 0069), defining a source illumination profile defining light illuminated on the reticle (para 0067 and 0106), evaluating the cost metric based on the source profile (para 0067-0071), modifying the source illumination profile and reevaluating cost metric (para 0067, 0077, 0078) and repeating until the cost metric is minimized (table 1, para 0106, 0084-0088).

However, Mol does not disclose forming a diffractive optical element and computer program product which generate files corresponding to optical element for use in an imaging system.

Dowsk discloses forming a diffractive optical element (para 0050-0061). Jeong discloses in col. 19, line 31 – col. 20, line 2, a computer program for generating files corresponding to optical element for use in an imaging system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the diffractive optical element of Dowsk to the invention of Mol in order to increase depth of field and control focus-related aberrations (para 0027) and the computer program of Jeong to Mol in order to compensate for the lens aberration as taught by Jeong in col. 10, lines 31-36.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Peter B. Kim
Primary Examiner
Art Unit 2851

February 25, 2005